

## Intrraction Effect of Silver Nanoparticles and Antibacterial Medicines on *Staphylococcus Aureus* Isolated from Cattle Mastitis

Jalal Kazemi\*; Malahat Ahmadi; Habib Dastmalchi Saei; Behzad Shafiei

Department of Microbiology, Faculty of Veterinary Medicin, University Urmia, Iran

jalalkazemi89@gmail.com

**Background & Objectives:** *Staphylococcus aureus* is a major causative of mastitis. Resistance against antibiotics is well known in *Staphylococcus aureus*. The intraction effect of silver nanoparticles, which have antibacterial effect, studied in combination with antibacterial medicines. The aim of study was to determination of resistance pattern, antibacterial effect of silver nanoparticles and intraction effect of silver nanoparticles in combination with antibacterial medicines in *Staphylococcus aureus*.

**Methods:** 50 *Staphylococcus aureus* isolated from mastitis and confirmed using nucgene amplification. By using minimum inhibitory concentration (MIC), the effect of some antibacterial medicenes (cefazolin, gentamycin, streptomycin) in concentration of 100 µg/ml, silver nanoparticles in concentration of 25-100 µl/ml and combination of them, were tested.

**Results:** 100% , 22 % and 32% of isolates were resistant against streptomycin, cefazolin, gentamicin respectively. The highest effect of silver nanoparticles were in 80µl/ml. All isolates which were resistant against cefazolin and gentamicin, were sensitive against lowest concentration of silver nanoparticles (25 µl/ml) in combination with antibacterial medicines (synergistic). Antagonistic effect between silver nanoparticles and antibacterial medicines observed just with streptomycin.

**Conclusion:** The presence of cyclic streptidin in streptomycin neutralizes the silve nanoparticles (antagonist). Finally, although all medicines have not proper synergistic effect with silver nanoparticles or effect in high concentrations, but according to synergistic effect of used medicines, production of nanoparticle medicenes for veterinary use is recommended.

**Keywords:** *Staphylococcus Aureus*; Mastitis; Silver Nanoparticle; Antibiotic